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Thermal and Thermoelectric Transport in Thin Films and Nanostructures[1] B. L. ZINK, R. SULTAN, A. D. AVERY, University of Denver — Interest in increasing efficiency of energy generation continues to spur the development of new thermoelectric materials. Though bulk materials hold the most promise for large-scale energy generation, many groups continue to explore increasing the thermoelectric figure-of-merit by taking advantage of techniques for creating nanostructured materials such as multilayered thin films and nanowires. These systems could prove to have high figures-of-merit and be important for integrating energy harvesting and/or cooling with micro- or nanoscale devices "on chip." Though many promising systems have been identified, measuring their fundamental thermal transport often remains a major challenge. In this talk, we briefly describe our recent advances in measuring in-plane thermal transport, thermopower and electrical conductivity on thin-films or nanolithographically patterned systems. Our technique allows great flexibility for studying the thermoelectric properties of a wide range of materials, from amorphous semiconductors to semi-metallic nanowires.

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